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10/754,348	01/09/2004	John D. Summers	EL0538USNA	8319

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E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1128
4417 LANCASTER PIKE
WILMINGTON, DE 19805

EXAMINER	
POULOS, SANDRA K	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/754,348	SUMMERS ET AL.	
	Examiner	Art Unit	
	Sandra K. Poulos	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/26/04;2/03/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The use of the trademark Dowanol® PPH (pg 6) has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. The generic name appears to be propylene glycol monophenyl ether.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

2. Claim 17 is objected to because of the following informalities: Claims must begin with a capital letter and end in a period. MPEP 608.01(m).

Appropriate correction is required

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8, 11, 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8 and 16 appear to improperly recite a Markush group. Consequently, it is impossible to determine which elements of the group are required by the claims. When materials recited in a claim are so related as to constitute a proper Markush group, they may be recited in the conventional manner, or alternatively. For example, if "wherein R is a material

selected from the group consisting of A, B, C and D" is a proper limitation, then "wherein R is A, B, C or D" shall also be considered proper (emphasis added). See MPEP § 2173.05(h).

Claim 18 is indefinite because it is unclear what "ESD" is an abbreviation for.

Claim 19 is indefinite because it is unclear what property has a percent loss of less than 5%.

Claims 11, 17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon a rejected base claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1-3, 5-6, 9, 20, 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 11-050037 (a machine translation from JPO and abstract are used hereafter).

JP 037 discloses a composition that is excellent in heat resistance, processability and adhesion, particularly shows low water absorption and can be used as a mounting material for semiconductor devices and in electronic parts (abstract; para 1). The aromatic polyester imide polymer (formula I) has a water absorption of less than 1.0% (para 13) and a glass transition temperature is 300 C or less (para 47). The polymer is reacted in a polar solvent such as pyrolidone (para 41-42, 49, 71) or other solvents such as benzene, toluene, and xylene (para

43). The composition contains thermally conductive fillers, up to 80% of Ag, Au, aluminum, nickel, etc (para 50). The amount should be no more than 80% so that the adhesive properties will not decline (para 50).

Therefore, JP 037 anticipates the cited claims.

5. Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by EP 1 145 845.

EP 845 discloses a composite film having excellent heat resistance which is formed into a film or membrane for insulation films, circuit boards, or resistors (abstract; para 40). The thickness of the film is about 0.1-30 μm (para 35). The polymer has a glass transistion temperature of 180 to 350 C and a water absorption of 1.0 to 2.0% (para 36). The polymer is diluted with a toluene, dioxane, or anisole or a polar solvent (para 29-30).

Therefore, EP 845 anticipates the cited claim

6. Claims 1-3, 7-8, 10, 12-13, 22, 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al (US 2004/0084774).

Li discloses polynorbornene copolymers (para 32, 38-47) that have a glass transition temperature of greater than 200 C, preferably greater than 300 C, and less than two percent weight loss after holding at 300 C (para 17, 31). The solvent is generally xylene (Table 2, 6, 14, para 132). Small amounts of thermal stability additives such as Si are included, which are blended with the polymer or react with the polymer (para 56). Adhesion promoters are included in order to promote adhesion of the polymer to the metal substrate (para 57-73, 84), with a trihydroxyphenyl ether as a preferred adhesion promoter (para 63). Although Li does not disclose a water absorption of 2% or less, it is examiner's position that Li's recited "less than 2% weight loss" would indicate that the polymer inherently meets the claimed limitation, because

less than 2% weight loss at 300 C would indicate that less than 2% water has been liberated from the polymer thereby indicating the polymer has a water absorption of 2% or less.

Therefore, Li anticipates the cited claims.

Claim Rejections - 35 USC § 102/103

7. Claims 1-8, 10, 22, 23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 10-251343 (a machine translation from JPO and abstract are used hereafter).

JP 343 discloses a norbornene-based polymer and epoxy group containing norbornene-based polymer which are described in the formulas I and II (abstract; para 5-70). The polymer is excellent in electric insulation and heat resistance (abstract; para 1-3). Organic solvents are included (para 54) and iron or transition metal compounds are used (para 51-53). The glass transition temperature of the polymer is usually 150-350 C, more preferably 100-400 C (para 75). Desirable inorganic fillers include fused silica powder (para 82, 93) and crosslinking agents such as peroxides are used (para 83-85). Solvents such as toluene, xylene, and hydrocarbons are used to dissolve the polymer system (para 96). The composition is used for electronic parts such as diodes, transistors, a resister network, capacitors, an overcoat film for semiconductors, etc (para 101, 111).

Although JP 343 is silent with respect to the water absorption value of the polymer, the composition of JP contains similar ingredients to the currently claimed composition, thus it is examiner's position that although it is not specifically recited, the composition in JP 343 would nonetheless inherently meet the requirements for the currently claimed water absorption, or alternatively, would obviously have been present in the JP 343 polymer, absent evidence to the contrary.

8. Claims 1-7, 10, 14-15, 20-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kodemura et al (US 6,492,443).

Kodemura discloses a norbornene resin composition for electronic parts (col 1, lines 5-20, 63-67) and improved adhesion to metals (col 2, lines 36-39). The glass transition temperature of the norbornene polymer is preferably 120 to 330 C (col 8, lines 40-45). The composition contains crosslinking agents (col 13 line 59 to col 17 line 49) wherein blocked isocyanates are disclosed (col 15, lines 24-29), fillers to improve mechanical strength, the fillers containing metal (col 17, lines 50 to col 18 line 8), flame retardants also containing metal compounds (col 18 line 15 to col 19 line 8), and other compounding additives (col 20 lines 1-34). Solvents such as toluene, xylene, hexane, etc are used to dissolve the norbornene polymer (col 20, lines 35-51). The composition has be molded into various parts (col 20, lines 66-67) or forming a sheet with a thickness of 50-500 μm (col 21, lines 11-23) and is useful in electronic parts such as capacitors, circuits, transistors, relays, etc (col 23, lines 24-57). The composition is cured at about 200 C by heat curing for one hour (col 31, line 67) or by heating to 100 C for 20 hours (col 31, lines 20).

Although Kodemura is silent with respect to the water absorption value of the polymer, the composition of Kodemura contains similar ingredients to the currently claimed composition and contains a norbornene polymer, thus it is examiner's position that although it is not specifically recited, the norbornene polymer in Kodemura would nonetheless inherently meet the requirements for the currently claimed water absorption, or alternatively, would obviously have been present in the Kodemura polymer, absent evidence to the contrary.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 2004/0084774).

The discussion with respect to Li in paragraph 6 above is incorporated herein by reference.

Li discloses that the glass transition temperature is greater than 300 C but does not specifically disclose greater than 310 C; Li also discloses weight loss of less than 2% but does not specifically disclose less than 1%. However, since 310 C would fall within the range of greater than 300 C, and less than 1% would fall within the range of less than 2%, as disclosed by Li, it would have been obvious to one of ordinary skill in the art to use a polymer with a Tg of greater than 310 C and less than 1% weight loss because it is within the disclosed range.

10. Claims 16 are 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodemura et al (US 6,492,443).

The discussion with respect to Kodemura in paragraph 8 above is incorporated herein by reference.

Although Kodemura discloses the composition as useful for electronic parts, he does not disclose use as a discrete or planar capacitor.

With respect to (1), Kodemura broadly discloses that the composition is useful in electronic parts such as capacitors (col 23, lines 24-57). It would have been obvious to one of ordinary skill in the art to use the composition in all types of capacitors such as discrete or planar capacitors because Kodemura makes clear that the composition is useful for capacitors in general, so one of ordinary skill in the art would have a reasonable expectation of success when using the composition for more specific kinds of capacitors.

11. Claims 16-18, 25-30, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodemura et al (US 6,492,443) in view of Dorfman (US 5,470,643).

The discussion with respect to Kodemura in paragraph 8 above is incorporated herein by reference.

Although Kodemura discloses the composition as useful for electronic parts, he does not disclose use as a polymer thick film resistor.

Dorfman discloses a polymer thick film resistor composition which comprises particles of conductive metal and particular material, thermoplastic resin, and organic solvent; the composition is cured by heating (abstract). The resistor exhibits a resistance of less than 5% (col 2, line 23). It would have been obvious to one of ordinary skill in the art to use the composition disclosed by Kodemura for a thick film resistor that exhibits a resistance of less than 5% (as disclosed by Dorfman) because the composition by Kodemura is useful in many types of electrical applications and one would use for a PTF resistor since both Kodemura and Dorfman describe similar composition and the Kodemura composition further exhibits excellent

electrical properties (col 1, lines 14-19), so one would have a reasonable expectation of success in the combination.

Absent evidence to the contrary, it is examiner's position that such a resistor made from the composition by Kodemura/Dorfman would intrinsically have a percent resistance change of less than ±5% with respect to the relative humidity test and a percent resistance change of less than ±1% with respect to an ESD test since the composition is the same of that claimed and Dorfman discloses that the resistance change would be less than 5% in the boiling water test.

12. Claims 16-18, 25-26, 28-29, 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 037, as applied to claims 1-3, 5-6, 9, 20, 22-23 above, in view of Dorfman (US 5,470,643).

The discussion with respect to JP 037 in paragraph 4 above is incorporated herein by reference.

Although JP 037 discloses the composition as useful for electronic parts, it does not disclose use as a polymer thick film resistor.

Dorfman discloses a polymer thick film resistor composition which comprises particles of conductive metal and particular material, thermoplastic resin, and organic solvent; the composition is cured by heating (abstract). The resistor exhibits a resistance of less than 5% (col 2, line 23). It would have been obvious to one of ordinary skill in the art to use the composition disclosed by JP 037 for a thick film resistor that exhibits a resistance of less than 5% (as disclosed by Dorfman) because the composition by JP 037 is useful in many types of electrical applications and one would use for a PTF resistor since both JP 037 and Dorfman describe similar composition and the JP 037 composition further exhibits excellent in heat

resistance, processability and adhesion (para 3), so one would have a reasonable expectation of success in the combination.

Absent evidence to the contrary, it is examiner's position that such a resistor made from the composition by JP 037/Dorfman would intrinsically have a percent resistance change of less than ±5% with respect to the relative humidity test and a percent resistance change of less than ±1% with respect to an ESD test since the composition is the same of that claimed and Dorfman discloses that the resistance change would be less than 5% in the boiling water test.

13. Claims 16-18, 25-26, 28-31, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 343, as applied to claims 1-8, 10, 22, 23 above, in view of Dorfman (US 5,470,643).

The discussion with respect to JP 343 in paragraph 7 above is incorporated herein by reference.

Although JP 343 discloses the composition as useful for electronic parts, it does not disclose use as a polymer thick film resistor.

Dorfman discloses a polymer thick film resistor composition which comprises particles of conductive metal and particular material, thermoplastic resin, and organic solvent; the composition is cured by heating (abstract). The resistor exhibits a resistance of less than 5% (col 2, line 23). It would have been obvious to one of ordinary skill in the art to use the composition disclosed by JP 343 for a thick film resistor that exhibits a resistance of less than 5% (as disclosed by Dorfman) because the composition by JP 343 is useful in many types of electrical applications and one would use for a PTF resistor since both JP 343 and Dorfman describe similar composition and the JP 343 composition further exhibits good thermal and

moisture resistance (para 3), so one would have a reasonable expectation of success in the combination.

Absent evidence to the contrary, it is examiner's position that such a resistor made from the composition by JP 343/Dorfman would intrinsically have a percent resistance change of less than ±5% with respect to the relative humidity test and a percent resistance change of less than ±1% with respect to an ESD test since the composition is the same of that claimed and Dorfman discloses that the resistance change would be less than 5% in the boiling water test.

14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 343, as applied to claims 1-8, 10, 22, 23 above, in view of JP 04214778 (wherein the Derwent abstract is used hereafter).

The discussion with respect to JP 343 in paragraph 7 above is incorporated herein by reference.

JP 343 does not disclose that the composition further contains polyhydroxystyrene.

JP 778 discloses a composition for use on circuit substrate and electronic equipment and parts. The composition contains a conductive powder and organic binder. The use of polyhydroxystyrene in the composition improve the adhesion of the composition to the metal surface. Thus, it would have been obvious to one of ordinary skill in the art to include polyhydroxystyrene in the composition disclosed by JP 343 in order to improve adhesion properties for the composition when used for electronic parts.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-US 6,228,288 discloses PTF resistors and compositions containing polymer, metal particles, and organic solvent.
-JP 2001-217438 discloses a polymer film with a water absorption of less than 2%.
-US 2002/0122747 discloses a norbornene polymer composition for electronics.
-US 6,956,098 discloses polymers for electronics that have a water absorption less than 2%.
-US 2005/0154181 is a similar application to the current.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sandra K. Poulos whose telephone number is (571) 272-6428. The examiner can normally be reached on M-F 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SKP

Sandra K. Poulos

Vasu Jagannathan
VASU JAGANNATHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700